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Applicant(s): Nomula
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Art Unit: 3727
Examiner: Robin A. Hylton
Title: EASY-OPENING CONTAINER AND CLOSURE WITH RADIATION-WEAKENED BOND AND M ETHOD THEREFOR

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APPEAL BRIEF UNDER 37 CFR § 41.37

This Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences" filed August 30, 2007.

1. *Real Party in Interest.*

The real party in interest in this appeal is Sonoco Development, Inc., the assignee of the above-referenced patent application.

2. *Related Appeals and Interferences.*

There are no related appeals and/or interferences involving this application or its subject matter.

3. *Status of Claims.*

The present appeal involves claims 1-7, 9-17, 19-27, 29, 30, 40, and 41, which are presently under a final rejection as set forth by the final Official Action mailed May 30, 2007. Claims 8, 18, 28, and 31-39 were previously cancelled. A copy of the claims is included in the

Appendix. The status of the claims and rejections was not changed by the Advisory Action mailed August 17, 2007.

4. ***Status of Amendments.***

The claims stand as last amended in the Amendment filed October 12, 2006. No amendments were made in the subsequently filed responses.

5. ***Summary of Claimed Subject Matter.***

The application is generally directed to an easy-opening closure for hermetic sealing of an open end of a retortable container and an easy-opening container that is hermetically sealed by such a closure. *See* page 1, lines 6-8.

Claim 1 recites an easy-opening, retortable container that includes a base portion and a plastic membrane. The base portion has a bottom and side defines an interior space and an opening thereto. The container also includes a plastic membrane of sufficient size to cover the opening and having an outer peripheral area attached to the base portion by a radiation weakened bond. For example, as illustrated in Figure 1 of the present application, the container **10** has a base portion **12** that defines an interior space **22** and an openable first end **16**. *See* page 4, line 21 – page 5, line 6. The openable first end **16** is closed by a closure **30**, which can be a generally planar membrane having an outer peripheral area **31** that cover an intermediate area **27** of an end ring **24** that is bonded to a side **14** of the base portion **12**. *See* page 5, lines 16-22. In particular, the closure **30** can be connected to the base portion **12** by a circumferential bond **32** that is formed of an adhesive, such as polyurethane. *See* page 6, lines 3-5 and 19-25.

The bond of Claim 1 is a radiation weakened bond that is formed of an adhesive and has a predetermined tensile force strength, and the predetermined tensile force strength of the weakened bond allows easy-opening of the container by peeling the membrane from the base portion. For example, as explained in the present application, the adhesive bond **32** can be formed with sufficient strength to maintain the attachment of the closure **30** to the base portion **12** throughout the manufacture, filling, processing, and/or handling of the container **10**, such as a shear force strength of at least about 20 psi so that the container **10** can withstand a retort process in which the sealed container **10** is subjected to relatively high temperatures and corresponding internal pressure, or other processing operations. *See* page 6, lines 3-11. Subsequently, the strength of the bond **32** can be reduced, for example, to have a tensile force strength of less than about 14 pounds so that a user can open the closure **30** by lifting or peeling the closure **30** from the container **10**. *See* page 6, lines 12-18.

The weakening of the bond **32** is be performed by subjecting the formed bond **32** to radiation. For example, as shown in Figure 1 of the present application, a radiation source **40** can be used to emit radiation through the closure **30** and to the bond **32**. In one embodiment, the radiation source **40** is configured to generate microwave radiation that is directed toward the bond **32**, e.g., electromagnetic radiation characterized by a frequency between about 300 MHz and 300 GHz, so that the resulting bond is weakened by microwave radiation (as recited in dependent Claim 10). Thereafter, the resulting radiation weakened bond **32** can be strong enough to maintain a hermetic seal between the closure **30** and the base portion **12**, but weak enough that a person can easily open the container **10**. *See* page 7, lines 3-23. Dependent Claim 40 recites that the weakened bond is defined by a radiation weakened adhesive disposed between the base portion and the plastic membrane, i.e., as shown in Figure 1. Dependent Claim 41 recites that the radiation weakened adhesive consists of radiation weakened polyurethane. *See* page 6, lines 19-25.

Similar to Claim 1, independent Claim 11 is also directed to an easy-opening, retortable container that includes a base portion and a plastic membrane. The base portion has a bottom and side defining an interior space and an opening thereto. The plastic membrane is of sufficient size to cover the opening and has an outer peripheral area attached to the base portion by a bond. *See* page 4, line 21 – page 5, line 6; page 5, lines 16-22. The bond, which is formed of an adhesive, has a predetermined shear force strength and is configured to be radiation weakened to have a predetermined tensile force strength, such that the predetermined shear force strength of the bond is sufficient to withstand forces created during retort processing of the container, and the predetermined tensile force strength of the bond allows easy-opening of the container by peeling the membrane from the base portion. For example, polyurethane or another adhesive can be used to form the bond such that the adhesive bond connecting the plastic membrane to the base portion is configured to be radiation weakened as described above. *See* page 6, lines 3-18.

Independent Claim 21 is directed to an easy-opening closure for hermetic sealing of an open end of a retortable container. The container includes a plastic end ring and a plastic membrane. The plastic end ring has an outside peripheral area adapted to be joined to the open end of the retortable container and an intermediate area extending radially inward from the outer peripheral area and defining an opening to allow access therethrough to the interior of the container. For example, as shown in Figure 1, the base portion **12** can include an end ring **24** that extends circumferentially and radially inward from the side **14** to define an opening **26** that is smaller than the diameter of the side **14** at the first end **16**. An outer peripheral area **25** of the end ring **24** can be fusion bonded to the side **14**, e.g., by spin friction welding the end ring **24** thereto or otherwise fusion welding the plastic end ring, as recited in Claim 22. *See* page 5, lines 4-15. The plastic membrane is of sufficient size to cover the opening and has an outer peripheral area overlapping and attached to the intermediate area of the end ring by a bond. For example, the plastic membrane of the closure **30** illustrated in Figure 1 can be cover the opening **16** of the base portion **12** with an outer peripheral area **31** covering an intermediate area **27** of the end ring **24**. *See* page 5, lines 16-22. The bond is formed of an adhesive, such as polyurethane (as recited in dependent Claim 29), disposed between the plastic end ring and the plastic membrane and having a predetermined shear force strength and configured to be radiation weakened to have a predetermined tensile force strength, such that the predetermined shear force strength of the bond is sufficient to withstand forces created during retort processing of the container, and the predetermined tensile force strength of the bond allows easy-opening of the container by peeling the membrane from the end ring. *See* page 6, lines 3-18. Dependent Claim 30 further recites that the bond is adapted to be weakened by microwave radiation, e.g., using the radiation source **40** to direct microwave radiation through the plastic membrane of the closure **30** and toward the bond **32**, as described above. *See* page 7, lines 3-23.

6. ***Grounds of Rejection to be Reviewed on Appeal.***

The following grounds of rejection are appealed:

(1) Claims 1-7, 9-17, 20-27, 30, 40, and 41 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,069,355 ("Matuszak") in view of U.S. Patent No. 5,180,599 ("Feldmeier, et al.")[1]. *See* Final Office Action of May 30, 2007, page 2.

(2) Claims 9, 20, and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matuszak in view of Feldmeier, et al. and in further view of U.S. Patent No. 6,302,321 ("Reese, et al."). *See* Final Office Action of May 30, 2007, page 3

(3) Claims 21-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,752,614 ("Nelson, et al.") in view of Matuszak. *See* Final Office Action of May 30, 2007, page 4.

(4) Claim 29 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson, et al. in view of Matuszak and in further view of Reese, et al. *See* Final Office Action of May 30, 2007, page 5.

(5) Claims 1-7, 10, and 40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Feldmeier, et al. and Matuszak. *See* Final Office Action of May 30, 2007, page 5.

(6) Claims 9 and 41 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson, et al. in view of Feldmeier, et al. and Matuszak and further in view of Reese, et al. *See* Final Office Action of May 30, 2007, page 7.

(7) Claims 11-17, 19, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson, et al. in view of Feldmeier, et al. and Matuszak. *See* Final Office Action of May 30, 2007, page 7.

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[1] As noted below, U.S. Patent No. 5,180,599 was erroneously referred to in several Office Actions as "Diamond." The comments in the Advisory Action clarify that the reference relied upon in the final Office Action is U.S. Patent No. 5,180,599 to Feldmeier, et al., not Diamond. *See* Advisory Action of August 17, 2007, page 2.

7. *Argument.*

A. Claims 1-7, 9-17, 20-27, 30, 40, and 41 are not obvious over Matuszak in view of Feldmeier, et al.

(1) Matuszak and Feldmeier, et al. fail to disclose the features of Claim 1

Claim 1 is directed to an easy-opening, retortable container that includes a base portion and a plastic membrane of sufficient size to cover an opening to an interior space defined by the base portion. The plastic member has "an outer peripheral area attached to the base portion by a radiation weakened bond, the radiation weakened bond being formed of an adhesive and having a predetermined tensile force strength," allowing easy-opening of the container by peeling the membrane from the base portion. Thus, as set forth in Claim 1, the plastic member is attached to the base member by a radiation weakened bond formed of an adhesive. As explained below, neither Matuszak nor Feldmeier, et al. discloses a radiation weakened bond formed of an adhesive.

The final Office Action acknowledges that Matuszak does not disclose a radiation weakened bond formed of an adhesive. *See* final Office Action, page 2. In this regard, the Office Action relies on Feldmeier, et al., stating that "[Feldmeier, et al.][2] teaches it is known to provide a container and lid, the lid being bonded to the container opening by various methods including a radiation weakened adhesive bond (col. 4, lines 64-67)." Final Office Action, page 2.

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[2] The final Office Action refers to "Diamond"; however, as noted in the Advisory Action, the reference relied upon in the final Office Action is U.S. Patent No. 5,180,599 to Feldmeier, et al., not Diamond. *See* Advisory Action, page 2. In other places of this Appeal Brief, quotations from the final Office Action containing references to "Diamond" or "Diamond, et al." have been corrected to instead refer to "Feldmeier, et al." All such changes in direct quotations are indicated by the use of brackets, as used above immediately preceding the reference number to this footnote. Further, in reviewing the prosecution history, the Board should understand that, since Appellant had previously been unsure of the intended reference that was relied upon in the final Office Action of May 30, 2007 and the previous Office Action of December 28, 2007, Appellant's prior responses of January 17, 2007 and July 30, 2007 regard another patent to Diamond, et al. instead of U.S. Patent No. 5,180,599 to Feldmeier, et al. Thus, Appellant's prior arguments regarding the cited references are superseded by those set forth in this Appeal Brief.

Appellant respectfully disagrees. The portion of Feldmeier, et al. that is cited in the Office Action states as follows and does not support the Examiner's contention regarding a radiation weakened adhesive bond:

> A two-piece ham package having a base member formed from a Barex packaging film and a covering member formed from a Barex film in the shape of a bubble member were provided.

Col. 4, lines 64-67.

Neither this passage of Feldmeier, et al. nor any other portion of teaching of Feldmeier, et al. regards a radiation weakened adhesive bond, as recited in Claim 1. Rather, Feldmeier, et al. is directed to a peelable seal formed by surface treating a polyacrylonitrile film to reduce the strength of a bond between the treated film and an adhesive, not by treating the adhesive. In particular, Feldmeier, et al. describes the process as follows:

> A first polyacrylonitrile packaging film has a surface thereof treated with a corona discharge. An adhesive is applied to either the treated film or an opposite second packaging film and the first and second films are brought into contact. The corona discharge treatment of the polyacrylonitrile film reduces the bond strength between the adhesive and the treated film such that the adhesive peels cleanly and uniformly away from the seal area of the treated film, without "stringing".

Abstract.

The disclosure of Feldmeier, et al. unambiguously states that the corona discharge treatment is formed on the film, not the adhesive. In fact, the corona discharge treatment is performed prior to the application of the adhesive. This distinction is further described by Feldmeier, et al. as follows:

> Such a seal is accomplished by providing a sheet of polyacrylonitrile film, such as Barex, and surface treating either a portion or all of that film sheet with a corona discharge to increase the surface tension of the film. A hot melt adhesive may be applied to the treated film and a package is subsequently formed by combining the treated film and a similar, but untreated, Barex packaging film.

Col. 2, lines 8-15 (emphasis added).

> It is another object of the present invention to provide a method for manufacturing a package from two opposing packaging film sheets and having a peelable seal which permits access to the contents of the package in which one of the package film sheet is treated by a corona discharge treatment prior to adhesion to the other opposing film sheet,

> the treated film sheet being subsequently adhered by an adhesive to the other film sheet such that the bond strength of the peelable seal at the sealed interface of the two film sheets requires a decreased opening force so that the adhesive easily and uniformly releases from the treated film when the package is opened.

Col. 2, lines 27-39 (emphasis added).

> After treatment of the film 102 with the corona discharge treatment, a hot melt adhesive **106** is applied to either one of the two respective sealing surfaces **110**, **112** of the packaging films **102**, **104**.

Col. 4, lines 37-40 (emphasis added).

Claim 1 recites a radiation weakened bond formed of an adhesive, but, even if the corona discharge of Feldmeier, et al. is considered to be a radiation treatment, Feldmeier, et al. does not teach or suggest that the adhesive is subjected to the corona discharge treatment. Thus, the adhesive of Feldmeier, et al. is not radiation weakened, and Feldmeier, et al. does not provide any teaching or suggestion for a radiation weakened adhesive. Further, Feldmeier, et al. teaches that the corona discharge treatment is performed prior to formation of the bond. The bond does not even exist at the time of the corona discharge treatment. Thus, the bond itself is not radiation weakened.

Appellant has repeatedly noted this deficiency of Feldmeier, et al. since it was first cited in the Office Action of August 10, 2006. Further, the Examiner has acknowledged that Feldmeier, et al. is deficient in this respect. In particular, the Office Action of December 28, 2006 specifically withdrew the prior rejection of Claim 1 (and various other claims) based on Feldmeier, et al in light of Appellants arguments stating as follows:

> Applicant's arguments, see page 8, paragraph 3, filed October 12, 2006, with respect to the rejection(s) of claim(s) 1-7,9-17 , 19,20,40, and 41 under 35 USC 102 and/or 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Matuszak in view of [Feldmeier, et al.].

Office Action of December 28, 2006, page 10.

Appellant's comments from the October 12, 2006 response regarded Feldmeier, et al. and explained that "the corona treatment is performed only on the film sheet, not the adhesive" as also explained above, and that "the adhesive of Feldmeier, et al. is not radiation weakened."

Although the prior rejection based on Feldmeier, et al. was withdrawn and Claim 1 was then rejected in light of Matuszak in view of Feldmeier, et al., no Office Action since that time has shown how this deficiency of Feldmeier, et al. is cured by the other cited references. In fact, as noted above, the final Office Action even acknowledges that Matuszak "is silent regarding the adhesive bond being a radiation weakened bond." Accordingly, a *prima facie* case of obviousness has not been made.[3]

In response to Appellant's prior arguments, the final Office Action states as follows:

> The bond of [Feldmeier, et al.] is inherently a radiation weakened bond since the radiation must first weaken the adhesive in order for the adhesive to soften enough to create a bond. Although the bond is not stated to be radiation weakened. It is inherently one.

Final Office Action, page 9.

This assertion is not supported by Feldmeier, et al. In particular, Feldmeier, et al. does not teach or suggest that "radiation must first weaken the adhesive in order for the adhesive to soften enough to create a bond." To the contrary, Feldmeier, et al. discloses that the corona discharge treatment is performed prior to application of the adhesive and fails to teach or suggest that any radiation is applied to the adhesive or that any radiation is required for softening the adhesive or forming a bond. Feldmeier, et al. neither states nor inherently requires that an adhesive is weakened to create a bond or that the formed bond is radiation weakened. Accordingly, the bond of Feldmeier, et al. is not inherently a radiation weakened bond.

Also in response to Appellant's prior remarks regarding Claim 1, the final Office Action further asserts as follows:

> The claimed radiation weakened bond is a product-by-process feature. The finished product of a peelably attached lid and container does not require structure of a radiation weakened bond. However, the tensile strength of the bond of a finished product is a tangible limitation which can be measured. The tensile strength can be achieved by an means of a weakened bond. As set forth in MPEP 2113, the product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps.

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[3] Further, Appellant notes that Feldmeier, et al. is deficient for the same reasons as the previously cited reference relied upon in the prior Office Action. In particular, the Office Action of August 10, 2006, which introduced the Feldmeier, et al. reference, followed an RCE that Appellant filed May 19, 2006 in order to enter an amendment previously filed on April 21, 2006. In the Office Action of August 10, 2006, the Examiner withdrew the previous rejections based on U.S. Patent No. 4,857,369 to Oehlenschlager, et al.; however, Feldmeier, et al. is deficient for the very same reasons as U.S. Patent No. 4,857,369 to Oehlenschlager, et al. That is, any radiation weakening performed by Oehlenschlager, et al. occurs only before formation of the bond and, therefore, the heating operation of Oehlenschlager, et al. affects the surface of a fixing layer **10**, not any bond itself that is subsequently formed.

Final Office Action, page 9.

Appellant has previously addressed this issue and explained the significance of the recited phrase, in response to previous rejections based on Roth and Oehlenschlager, both of which failed to disclose radiation weakening. In particular, as explained in the Amendments of November 30, 2005 and April 21, 2006, both the MPEP and courts have recognized that product-by-process claims are limited by and defined by the claimed process and that the determination of patentability is based on the product itself. *See* MPEP 2113, Eighth edition, revision 2 (May 2004) (citing *In re Thorpe*, 777 F.2d 695, 698.) Further, "[t]he structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product." Id. (citing *In re Garnero*, 412 F.2d 276, 279). For example, the phrase "interbonded one to another by interfusion" is capable of being construed as a structural limitation rather than a process limitation, just as other phrases including "intermixed," "ground in place," "press fitted," "etched," and "welded," have also been held to be structural limitations. *See In re Garnero* at 279. Similarly, the term "radiation weakened bond" as set forth in the present claims is also capable of being construed as a structural limitation.

The structural limitation of the recited phrase in Claim 1 requires the structure implied by radiation weakening of a bond, i.e., a bond that has been radiation weakened or a bond with a structure that is the same as a radiation weakened bond. While a radiation weakened bond may be characterized by a particular tensile strength, the recited phrase does not merely require that the closure has a particular tensile strength, and the mere characteristic of a similar tensile strength in another bond does not render such a bond as being radiation weakened or even equivalent to a radiation weakened bond. Rather, the term "radiation weakened bond" requires that a "bond" is "radiation weakened," i.e., weakened by radiation, or has the same structure as such a radiation weakened bond. *See Id.* (holding the correct inquiry to be "whether the product defined by claim 1 is patentably distinguishable over the disclosures of [the prior art] in view of the structural limitation defining the panel as 'consisting essentially of expanded perlite particles * * * interbonded one to another by interfusion between the surfaces of the perlite particles.'")

Appellant notes that a previously submitted Declaration by the inventor explained that the structure of the radiation weakened bond of Claim 1 is not the same or equivalent to the structure of a bond formed by subjecting an adhesive to radiation prior to formation of the bond, i.e., to activate the adhesive with the radiation to form a bond as disclosed by U.S. Patent No. 6,688,486 to Diamond, et al. In other words, the bond of Claim 1 is chemically altered to reduce the bond strength, thereby changing the very structure of the bond. *See* Declaration by Srinivas Nomula, dated July 30, 2007, paragraph 6, submitted with Amendment after Final, dated July 30, 2007. However, since U.S. Patent No. 6,688,486 to Diamond, et al. is not relied upon in the final Office Action, and since none of the references that are cited and relied upon in the final Office Action disclose any radiation treatment of an adhesive for a bond (i.e., treating an adhesive prior to or following formation of the bond), Appellant is not relying on the Declaration.

In any case, neither Matuszak nor Feldmeier, et al. discloses a radiation weakened adhesive, and Appellant therefore respectfully submits that Claim 1 is allowable for this reason.

Claims 2-7, 9, 10, 40, and 41 depend from Claim 1 and should therefore be patentable over Matuszak and Feldmeier, et al. for the same reasons.

(2) Dependent Claim 10 provides additional features not disclosed by Matuszak and Feldmeier, et al.

Claim 10 depends from Claim 1 and further recites that "the bond is weakened by microwave radiation."

The final Office Action does not even assert that any of the cited references discloses the use of microwave radiation. In fact, the rejection of dependent Claim 10 on this basis does not even refer to the recited feature of the claim or attempt to show that the cited references disclose (a) any use of microwave radiation, or (b) any bond that has been weakened by microwave radiation or that is equivalent to a bond weakened by microwave radiation.

Appellant asserts that the cited references fail to disclose the feature of an adhesive bond weakened by microwave radiation or any bond having a structure equivalent thereto. To the contrary, Nelson, et al. and Matuszak do not teach or suggest any radiation weakening treatments. To the contrary, Nelson, et al. discloses a heat-sealable material used for a heat-seal bond and fails to teach that the resulting heat-seal bond is also capable of being radiation weakened or that such a bond is inherently configured to be radiation weakened. Matuszak teaches that the closure should have "seal integrity to allow a retort /sterilization process and reheating by microwave energy." Col. 2, lines 14-24. In other words, Matuszak teaches away from an adhesive bond that is configured to be radiation weakened, and instead discloses a bond that is maintained even when subjected to microwave energy.

Feldmeier, et al. discloses a corona discharge treatment occurring prior to adhesive bonding, but the treatment is not performed on an adhesive, is not performed on a bond, and does not result in a bond weakened by microwave radiation.

Accordingly, Appellant submits that Claim 10 is patentable over Nelson, et al., Feldmeier, et al., and Matuszak for this reason, in addition to the reasons noted above.

(3) Matuszak and Feldmeier, et al. fail to disclose the features of independent Claim 11

Independent Claim 11 is also directed to an easy-opening, retortable container and recites a base portion and a plastic membrane that has "an outer peripheral area attached to the base portion by a bond, the bond being formed of an adhesive and having a predetermined shear force strength and configured to be radiation weakened to have a predetermined tensile force strength." As explained above, neither Matuszak nor Feldmeier, et al. discloses a radiation weakened bond formed of an adhesive, and neither reference describes a bond that is configured to be so radiation weakened to have a predetermined tensile force strength as claimed. Accordingly, Appellant submits that Claim 11 is patentable over Matuszak and Feldmeier, et al. for the same reasons, as are each of the Claims 12-17 and 20, which depend from Claim 11.

(4) Matuszak and Feldmeier, et al. fail to disclose the features of independent Claim 21

Similarly, independent Claim 21 is directed to an easy-opening, retortable container having a base portion and a plastic membrane that has an outer peripheral area overlapping and attached to an intermediate area of an end ring by a bond, "the bond being formed of an adhesive disposed between the plastic end ring and the plastic membrane and having a predetermined shear force strength and configured to be radiation weakened to have a predetermined tensile force strength." As explained above, neither Matuszak nor Feldmeier, et al. discloses a radiation weakened bond formed of an adhesive, and neither reference describes a bond that is formed of an adhesive disposed between a plastic end ring and a plastic membrane and is configured to be so radiation weakened to have a predetermined tensile force strength as claimed. Accordingly, Appellant submits that Claim 21 is patentable over Matuszak and Feldmeier, et al. for the same reasons, as are each of the Claims 22-27 and 30, which depend from Claim 21.

(5) Claim 41 provides additional features not disclosed by Matuszak and Feldmeier, et al.

Claim 41 depends from Claim 1 and further recites that "the radiation weakened adhesive consists of radiation weakened polyurethane."

Claim 41 is rejected on the same basis as Claim 1, i.e., as obvious over Matuszak in view of Feldmeier, et al., but the rejection set forth in the Office Action on this basis does not refer to the feature of Claim 41 or indicate where Matuszak or Feldmeier, et al. disclose the use of radiation weakened polyurethane.

Appellant submits that neither of the cited references discloses any radiation weakened adhesive and, in particular, radiation weakened polyurethane.

Accordingly, Appellant submits that Claim 41 is patentable over Matuszak and Feldmeier, et al. for this reason, in addition to the reasons noted above.

B. Claims 9, 20, and 29 are not obvious over Matuszak in view of Feldmeier, et al. and Reese, et al.

Claims 9, 20, and 29 depend from Claims 1, 11, and 21, respectively. As set forth above, neither Matuszak nor Feldmeier, et al. discloses each of the features of the respective independent claims. Further, Reese, et al. fails to cure the deficiencies of Matuszak and Feldmeier, et al. That is, Reese, et al. does not disclose a radiation weakened bond formed of an adhesive as set forth in Claim 1, a bond formed of an adhesive and configured to be radiation weakened to have a predetermined tensile force strength as set forth in Claim 11, or a bond formed of an adhesive disposed between a plastic end ring and a plastic membrane and configured to be radiation weakened to have a predetermined tensile force strength as set forth in Claim 21. Accordingly, Appellant submits that Claims 9, 20, and 29 are patentable over Matuszak, Feldmeier, et al., and Reese, et al. for the same reasons set forth above.

C. Claims 21-27 are not obvious over Nelson, et al. in view of Matuszak

(1) Nelson, et al. and Matuszak fail to disclose the features of independent Claim 21

Independent Claim 21 is directed to an easy-opening closure for hermetic sealing of a retortable container. The closure includes a plastic member that is attached to a plastic end ring by a bond having a predetermined shear force strength and configured to be radiation weakened to have a predetermined tensile force strength, wherein the predetermined shear force strength of the bond is sufficient to withstand forces created during retort processing of the container, and the predetermined tensile force strength of the bond allows easy-opening of the container by peeling the membrane from the end ring. Thus, according to Claim 21, the plastic end ring is attached to the plastic membrane by a bond formed of an adhesive, and the adhesive that is disposed between the two plastic members is configured to be radiation weakened to have the predetermined tensile force strength. As described in the present application, such a configuration can be strong enough to withstand retort and other processing and, after retort or other processing, the adhesive bond can be radiation weakened so that the strength of the adhesive bond is then still strong enough to maintain a hermetic seal but weak enough that a person can easily open the container. *See* page 7, lines 1-23.

Independent Claim 21 stands rejected under § 103(a) as being unpatentable over Nelson, et al. in view of Matuszak. In this regard, the final Office Action states:

> Nelson discloses a closure for hermetic sealing of an open end of a retortable container, the closure comprising an end ring and a membrane adhesively attached to the end ring and covering an opening therethrough, the adhesive *configured* to be radiation weakened to have a predetermined tensile force strength and the ring is *configured* to be fusion welded to the container and the bond *adapted* to be weakened by microwave radiation.

Final Office Action, page 4 (emphasis in original).

Further, the Office Action states:

> It is noted the phrases "configured to be" and "adapted to be" do not positively set forth the structure set forth thereafter, but indicates the capability of the structure being possible. To that degree, the claims are met by the structure of Nelson.

Final Office Action, page 5.

Appellant respectfully disagrees with this characterization of Nelson and the application of Nelson to the claims. First, even under the proposed construction of the claims set forth in the Office Action, Nelson, et al. does not teach that the adhesive bond is configured to be radiation weakened to have a predetermined tensile force strength as recited in Claim 21 (or that the plastic end ring is configured to be fusion welded to the container and the bond is adapted to be weakened by microwave radiation, as recited in Claims 22 and 30, respectively). To the contrary, Nelson, et al. discloses a closure with a metal end ring and a heat-sealable material used for a heat-seal bond. Nelson, et al. does not disclose that such a heat-seal bond formed is also capable of being radiation weakened. Nor is such a bond inherently configured to be radiation weakened. To the contrary, Nelson, et al. suggests that the seal is formed using heat, and not that radiation would weaken the bond. Further, Nelson, et al. does not provide any motivation for instead providing a configuration in which the adhesive can be radiation weakened. Similarly, Matuszak does not teach or suggest this feature. In fact, Matuszak specifically teaches that the closure should have "seal integrity to allow a retort /sterilization process and reheating by microwave energy." Col. 2, lines 14-24. That is, Matuszak teaches away from an adhesive bond that is configured to be radiation weakened, and instead discloses a bond that is maintained even when subjected to microwave energy.

Nelson discloses a membrane patch **30** attached to an end ring **13**. The end ring **13** is metal, and the patch **30** is described as having a layered structure. In particular, the patch **30** "preferably utilizes a polypropylene heat seal layer at least one the bottom thereof and may also include a foil backbone layer. Often an additional layer is provided on top of the foil layer to add additional strength to the membrane patch **30**. The top layer can be a polyester laminate. The polypropylene heat seal layer can be cast polypropylene, blown polypropylene or may in the form of a co-extrusion." Col. 5, lines 23-31.

Further to the fact that Nelson, et al. fails to disclose any radiation weakening of an adhesive bond, Nelson, et al. fails to disclose even a configuration as recited in Claim 21 in which two plastic members are joined by an adhesive bond such that the adhesive can be radiation weakened after being disposed between the plastic members. Nor does either of the cited references provide any motivation for modifying the disclosed configuration to allow such radiation weakening of an adhesive bond. Indeed, neither Nelson, et al. nor Matuszak discloses that adhesive bonds can be radiation weakened. To the contrary, Nelson, et al. discloses an alternative configuration in which the various bonds are formed to have predetermined tensile and shear force strengths to withstand retort processing and allowing easy-opening. No radiation weakening (or other processing of the bond after formation) is necessary in the configuration of Nelson, et al.

The final Office Action also acknowledges that Nelson does not teach that the ring and membrane are plastic as claimed, but asserts that it would have been obvious "to form the container and lid of Nelson of plastic material and to use any material including polypropylene, ethylene vinyl alcohol and oxygen scavenger disposed polyolefin, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice as evidenced by Matuszak." Final Office Action, page 6.

Appellant disagrees with this assertion that it would have been obvious to use any material for the various structures of Nelson, et al. "including polypropylene, ethylene vinyl alcohol and oxygen scavenger disposed polyolefin, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice as evidenced by Matuszak." The final Office Action cites the "intended use" and the "suitability" of the materials, but the "intended use" and thus the "suitability" of the materials for use in the device of Nelson, et al. do not include the claimed configuration. That is, Nelson, et al. does not suggest any reason for modifying the configuration so that the adhesive can be radiation weakened. Nor does Matuszak evidence that it would have been obvious to modify the closure of Nelson, et al. to be formed of plastic with the adhesive bond configured to be radiation weakened. Matuszak is directed to a closure that can be reheated by microwave radiation and defines a predetermined peel strength at an interfacial plane of a multilayer structure for controlled delamination of the layers. *See* col. 2, lines 30-44. A modification of Nelson, et al. to include the recited materials for the "intended use" described in the present application relies on improper use of hindsight in light of the present invention. Although Appellant has noted this distinction in previous communications (*see* Amendment, filed January 17, 2007, pages 8-9; and Amendment after Final, filed July 30, 2007, page 10), the final Office Action does not even address this argument.

Accordingly, Appellant respectfully submits that Claim 21 is allowable for this reason, as are each of the dependent Claims 22-27.

(2) Nelson, et al. and Matuszak fail to disclose the features of dependent Claim 22

Dependent Claim 22 also provides an additional basis of distinction over Nelson, et al. and Matuszak. In particular, Claim 22 recites that "the plastic end ring is configured to be fusion welded to the container."

As noted above, the Office Action asserts that "Nelson discloses a closure . . . comprising an end ring . . . and the ring is *configured* to be fusion welded to the container." *See* final Office Action, page 4.

Appellant disagrees. Nelson, et al. discloses a metal end ring that is double seamed to the open end of a retortable container. The end ring is not fusion welded to the container.

Moreover, Nelson, et al. does not teach or suggest that the end ring is even configured to be fusion welded to the container, and neither of the references provides any motivation for modifying the structure of Nelson, et al. so that the end ring is configured to be fusion welded to the container. Further, if the end ring of Nelson, et al. were modified to be formed of plastic (as recited in Claim 21), the plastic end ring would not be configured to be welded to the container of Nelson, et al.

Accordingly, Appellant submits that Claim 22 is patentable over Nelson, et al. and Matuszak for this reason, in addition to the reasons noted above.

(3) Nelson, et al. and Matuszak fail to disclose the features of dependent Claim 30

Dependent Claim 30 also provides an additional basis of distinction over Nelson, et al. and Matuszak. In particular, Claim 30 recites that "the bond is adapted to be weakened by microwave radiation."

As noted above, the Office Action asserts that "Nelson discloses a closure . . . comprising an end ring and a membrane adhesively attached to the end ring . . . and the bond *adapted* to be weakened by microwave radiation." *See* final Office Action, page 4.

Appellant disagrees. Nelson, et al. does not disclose that any of the bonds are formed of an adhesive such that the bonds, once formed, can then be weakened by microwave radiation. Further, given that Nelson, et al. discloses an alternative structure for achieving predetermined tensile and shear force strengths to thereby withstand retort processing while still allowing easy-opening, it would not have been obvious to modify the structure of Nelson, et al. to provide an adhesive bond that can instead by weakened by microwave radiation after forming, as set forth in Claim 30.

Accordingly, Appellant submits that Claim 30 is patentable over Nelson, et al. and Matuszak for this reason, in addition to the reasons noted above.

D. Claim 29 is not obvious over Nelson, et al. in view of Matuszak and Reese, et al.

Claim 29 depends from Claim 21. As set forth above, neither Nelson, et al. nor Matuszak discloses each of the features of independent Claim 21. Further, Reese, et al. fails to cure the deficiencies of Nelson, et al. and Matuszak. That is, Reese, et al. does not disclose a plastic end ring that is attached to a plastic membrane by a bond formed of an adhesive, wherein the adhesive that is disposed between the two plastic members is configured to be radiation weakened to have the predetermined tensile force strength, as set forth in Claim 21. Accordingly, Appellant submits that Claim 29 is patentable over Nelson, et al., Matuszak, and Reese, et al. for the same reasons set forth above.

E. Claims 1-7, 10, and 40 are not obvious over Nelson, et al. in view of Feldmeier, et al. and Matuszak

(1) Nelson, et al., Feldmeier, et al., and Matuszak fail to disclose the features of Claim 1

As noted above, Claim 1 recites an easy-opening, retortable container having a plastic member with "an outer peripheral area attached to the base portion by a radiation weakened bond, the radiation weakened bond being formed of an adhesive and having a predetermined tensile force strength."

In the rejection of Claim 1 based on Nelson, et al. in view of Feldmeier, et al. and Matuszak, the Office Action again acknowledges that Nelson does not disclose a radiation weakened adhesive. Instead, the Office Action relies on Feldmeier, et al. in this regard, stating that "[Feldmeier, et al.] teaches it is known to join a membrane to a container opening via radiation weakened adhesive." Final Office Action, page 6. Further, the Office Action states that "[i]t would have been obvious . . . to apply radiation weakened adhesive to secure the membrane of Nelson to the opening as taught by [Feldmeier, et al.]. Doing so allows for a complete removal of the adhesive materials upon opening of the associated container." Id.

Appellant again disagrees with this characterization of Feldmeier, et al. Contrary to the assertion made in final Office Action, Feldmeier, et al. does not disclose the use of a radiation weakened adhesive. Rather, as explained above, Feldmeier, et al. teaches that a film sheet can be treated by a corona discharge treatment prior to the application of an adhesive that adheres the film sheet to another sheet. Neither the adhesive nor the resulting bond of Feldmeier, et al. is subjected to a radiation weakening operation.

The Office Action does not assert that Nelson, et al. or Matuszak cures this deficiency of Feldmeier, et al., and Appellant submits that the references do not cure the deficiency.

Accordingly, Appellant submits that Claim 1 is patentable over Nelson, et al. in view of Feldmeier, et al. and Matuszak, as are each of the dependent Claims 2-7, 10 and 40.

(2) Nelson, et al., Feldmeier, et al., and Matuszak fail to disclose the features of dependent Claim 10

Claim 10 depends from Claim 1 and further recites that "the bond is weakened by microwave radiation."

The final Office Action does not even assert that any of the cited references discloses the use of microwave radiation. In fact, the rejection of dependent Claim 10 on this basis does not even refer to the recited feature of the claim or attempt to show that the cited references disclose (a) any use of microwave radiation, or (b) any bond that has been weakened by microwave radiation or that is equivalent to a bond weakened by microwave radiation.

Appellant asserts that the cited references fail to disclose the feature of an adhesive bond weakened by microwave radiation or any bond having a structure equivalent thereto. To the contrary, Nelson, et al. and Matuszak do not teach or suggest any radiation weakening treatments. Feldmeier, et al. discloses a corona discharge treatment occurring prior to adhesive bonding, but the treatment is not performed on an adhesive, is not performed on a bond, and does not result in a bond weakened by microwave radiation.

Accordingly, Appellant submits that Claim 10 is patentable over Nelson, et al., Feldmeier, et al., and Matuszak for this reason, in addition to the reasons noted above.

(3) Nelson, et al., Feldmeier, et al., and Matuszak fail to disclose the features of dependent Claim 40

Claim 40 depends from Claim 1 and further recites that "the weakened bond is defined by a radiation weakened adhesive disposed between the base portion and the plastic membrane."

As noted above, none of the cited references discloses a radiation weakened adhesive. To the contrary, Nelson, et al. and Matuszak do not teach or suggest any radiation weakening. Feldmeier, et al. discloses a corona discharge treatment that only occurs prior to application of an adhesive, such that the adhesive is not radiation weakened.

Accordingly, Appellant submits that Claim 40 is patentable over Nelson, et al., Feldmeier, et al., and Matuszak for this reason, in addition to the reasons noted above.

F. Claims 9 and 41 are not obvious over Nelson, et al. in view of Feldmeier, et al., Matuszak, and Reese, et al.

(1) Reese, et al. does not cure the deficiencies of Nelson, et al., Feldmeier, et al., and Matuszak

Claims 9 and 41 depend from Claim 1. As set forth above, Nelson, et al., Feldmeier, et al., and Matuszak do not disclose all of the features of Claim 1. Further, Reese, et al. fails to cure the deficiencies of Nelson, et al., Feldmeier, et al., and Matuszak. That is, Reese, et al. does not disclose a radiation weakened bond formed of an adhesive as set forth in Claim 1. Accordingly, Appellant submits that Claims 9 and 41 are patentable over Nelson, et al., Feldmeier, et al., Matuszak, and Reese, et al. for the same reasons set forth above.

(2) Nelson, et al., Feldmeier, et al., Matuszak, and Reese, et al. fail to disclosure the features of Claim 41

Claim 41 depends from Claim 1 and further recites that "the radiation weakened adhesive consists of radiation weakened polyurethane."

The entire basis for this rejection set forth in the Office Action is repeated below:

> Nelson as modified discloses the claimed closure except for the adhesive being a polyurethane adhesive.
>
> Reese teaches that hot melt adhesive and polyurethane adhesive are structurally equivalent for securing two structures together.
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the polyurethane adhesive for the hot melt adhesive of Nelson. Doing so allows for use of different material known in the art for its ability to function the same as other known adhesives.

Final Office Action, page 7.

Appellant disagrees. Contrary to the assertion above from the Office Action, Nelson, et al. does not disclose all of the features of Claim 41 except that the adhesive is polyurethane adhesive. In fact, neither Nelson, et al. nor any of the other cited references discloses any radiation weakened adhesive. Nelson, et al., Matuszak, and Reese, et al. do not disclose any radiation weakening operations. Feldmeier, et al. discloses a corona discharge treatment, but fails to disclose that a polyurethane (or any other adhesive) is subjected to the corona discharge treatment.

Accordingly, Appellant submits that Claim 41 is patentable over Nelson, et al., Feldmeier, et al., Matuszak, and Reese, et al. for this reason, in addition to the reasons noted above.

G. Claims 11-17, 19, and 20 are not obvious over Nelson, et al. in view of Feldmeier, et al. and Matuszak

In this rejection of Claim 11, the final Office Action states that "Nelson does not teach the adhesive is radiation weakened to have a predetermined tensile force strength," but that "[Feldmeier, et al.] teaches it is known to join a membrane to a container opening via radiation weakened adhesive." Final Office Action, page 7.

As explained above, Feldmeier, et al. (as well as each of the other cited references) fails to disclose a radiation weakened bond formed of an adhesive or a bond that is configured to be so radiation weakened to have a predetermined tensile force strength as claimed.

Accordingly, Appellant submits that Claim 11 is patentable over Nelson, et al., Feldmeier, et al., and Matuszak, as are each of the dependent Claims 12-17, 19, and 20.

8. ***Claims Appendix.***

An appendix containing a copy of the claims involved in the appeal.

9. ***Evidence Appendix.***

None.

10. ***Related Proceedings Appendix.***

None.

CONCLUSION

For the above reasons, it is submitted that the rejections of claims 1-7, 9-17, 19-27, 29, 30, 40, and 41 are erroneous and reversal of the rejections is respectfully requested.

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Appendix – Listing of Pending Claims

The claims subject to this appeal are as follows:

1. (Previously Presented) An easy-opening, retortable container comprising:

a base portion having a bottom and side defining an interior space and an opening thereto; and

a plastic membrane of sufficient size to cover the opening and having an outer peripheral area attached to the base portion by a radiation weakened bond, the radiation weakened bond being formed of an adhesive and having a predetermined tensile force strength; and

wherein the predetermined tensile force strength of the weakened bond allows easy-opening of the container by peeling the membrane from the base portion.

2. (Original) An easy-opening, retortable container according to Claim 1 wherein the base portion is formed of plastic.

3. (Original) An easy-opening, retortable container according to Claim 1 wherein the base portion includes a plastic end ring fusion bonded to a body member, the end ring having an outer peripheral area adapted to be joined to the side of the base portion and defining the opening, the plastic membrane being attached to the end ring by the bond.

4. (Original) An easy-opening, retortable container according to Claim 1 wherein the predetermined tensile force strength is less than about 14 pounds.

5. (Original) An easy-opening, retortable container according to Claim 1 wherein the membrane and the base portion are formed of a high barrier material to prevent transmission of moisture and oxygen therethrough.

6. (Original) An easy-opening, retortable container according to Claim 1 wherein the membrane is formed of a co-extruded sheet of polypropylene and ethylene vinyl alcohol.

7. (Original) An easy-opening, retortable container according to Claim 1 wherein the membrane includes oxygen scavengers disposed in polyolefin.

8. (Canceled)

9. (Previously Presented) An easy-opening, retortable container according to Claim 1 wherein the adhesive is formed of polyurethane.

10. (Original) An easy-opening, retortable container according to Claim 1 wherein the bond is weakened by microwave radiation.

11. (Previously Presented) An easy-opening, retortable container comprising:

a base portion having a bottom and side defining an interior space and an opening thereto; and

a plastic membrane of sufficient size to cover the opening and having an outer peripheral area attached to the base portion by a bond, the bond being formed of an adhesive and having a predetermined shear force strength and configured to be radiation weakened to have a predetermined tensile force strength; and

wherein the predetermined shear force strength of the bond is sufficient to withstand forces created during retort processing of the container, and the predetermined tensile force strength of the bond allows easy-opening of the container by peeling the membrane from the base portion.

12. (Original) An easy-opening, retortable container according to Claim 11 wherein the base portion is formed of plastic.

13. (Original) An easy-opening, retortable container according to Claim 11 wherein the base portion includes a plastic end ring fusion bonded to a body member, the end ring having an outer peripheral area adapted to be joined to the side of the base portion and defining the opening, the plastic membrane being attached to the end ring by the bond.

14. (Original) An easy-opening, retortable container according to Claim 11 wherein the predetermined shear force strength is at least about 20 psi, and the predetermined tensile force strength is less than about 14 pounds.

15. (Original) An easy-opening, retortable container according to Claim 11 wherein the membrane and the base portion are formed of a high barrier material to prevent transmission of moisture and oxygen therethrough.

16. (Original) An easy-opening, retortable container according to Claim 11 wherein the membrane is formed of a co-extruded sheet of polypropylene and ethylene vinyl alcohol.

17. (Original) An easy-opening, retortable container according to Claim 11 wherein the membrane includes oxygen scavengers disposed in polyolefin.

18. (Canceled)

19. (Previously Presented) An easy-opening, retortable container according to Claim 11 wherein the adhesive is formed of polyurethane.

20. (Original) An easy-opening, retortable container according to Claim 11 wherein the bond is adapted to be weakened by microwave radiation.

21. (Previously Presented) An easy-opening closure for hermetic sealing of an open end of a retortable container, the closure comprising:

a plastic end ring having an outside peripheral area adapted to be joined to the open end of the retortable container and an intermediate area extending radially inward from the outer peripheral area and defining an opening to allow access therethrough to the interior of the container; and

a plastic membrane of sufficient size to cover the opening and having an outer peripheral area overlapping and attached to the intermediate area of the end ring by a bond, the bond being formed of an adhesive disposed between the plastic end ring and the plastic membrane and having a predetermined shear force strength and configured to be radiation weakened to have a predetermined tensile force strength; and

wherein the predetermined shear force strength of the bond is sufficient to withstand forces created during retort processing of the container, and the predetermined tensile force strength of the bond allows easy-opening of the container by peeling the membrane from the end ring.

22. (Original) An easy-opening closure according to Claim 21 wherein the plastic end ring is configured to be fusion welded to the container.

23. (Original) An easy-opening closure according to Claim 21 wherein the end ring is formed of plastic.

24. (Original) An easy-opening closure according to Claim 21 wherein the predetermined shear force strength is at least about 20 psi, and the predetermined tensile force strength is less than about 14 pounds.

25. (Original) An easy-opening closure according to Claim 21 wherein the membrane is formed of a high barrier material to prevent transmission of moisture and oxygen therethrough.

26. (Original) An easy-opening closure according to Claim 21 wherein the membrane is formed of a co-extruded sheet of polypropylene and ethylene vinyl alcohol.

27. (Original) An easy-opening closure according to Claim 21 wherein the membrane includes oxygen scavengers disposed in polyolefin.

28. (Canceled)

29. (Previously Presented) An easy-opening closure according to Claim 21 wherein the bond is formed of polyurethane.

30. (Original) An easy-opening closure according to Claim 21 wherein the bond is adapted to be weakened by microwave radiation.

Claims 31-39. (Canceled)

40. (Previously Presented) An easy-opening, retortable container according to Claim 1 wherein the weakened bond is defined by a radiation weakened adhesive disposed between the base portion and the plastic membrane.

41. (Previously Presented) An easy-opening, retortable container according to Claim 1 wherein the radiation weakened adhesive consists of radiation weakened polyurethane.

42. (Canceled)

Evidence Appendix

None.

Related Proceedings Appendix

None.